

Date: Wednesday, 21/01/2009 2:43:02 PM  
 User: Julie Dawson

## Process Sheet

<b>Customer</b> :	CU-DAR001 Dart Helicopters Services	<b>Drawing Name</b> :	ROUND BILLET 17-4
<b>Job Number</b> :	45037		
<b>Estimate Number</b> :	10040		
<b>P.O. Number</b> :		<b>Part Number</b> :	D6104005
<b>This Issue</b> :	21/01/2009	<b>S.O. No.</b> :	
<b>Prsht Rev.</b> :	NC	<b>Drawing Number</b> :	D6104 REV B
<b>First Issue</b> :	1/1	<b>Project Number</b> :	N/A
<b>Previous Run</b> :	43150	<b>Drawing Revision</b> :	B
<b>Written By</b> :		<b>Material</b> :	
<b>Checked &amp; Approved By</b> :	<u>JUL 09.01.21</u>	<b>Due Date</b> :	04/02/2009
<b>Comment</b> :	Est. A: 01.05.08 New Issue EC	<b>Qty:</b>	10 Um: Each

## Additional Product

Job Number:



<b>Seq. #:</b>	<b>Machine Or Operation:</b>	<b>Description :</b>
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1.0	PG	PURCHASING
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Comment: PURCHASING

Issue P/O: 8027C209/01/22

a) Description: S.S round billet

b) Ø4.00" x 5.10" long

c) Tolerance on all dimensions are +0.030"/-0.000"

d) Material: 17-4PH Stainless steel (Ams 5643 or Aisi 630) 10

e) One blank makes 2 parts

f) Material certification required

2.0	D6104005P	17-4 SS Roundbar 4.00"OD
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Comment: Qty.: 1.0000 Each(s)/Unit Total: 10.0000 Each(s)  
 17-4 SS Roundbar 4.00"OD

3.0	PACKAGING 1	PACKAGING RESOURCE #1
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Comment: PACKAGING RESOURCE #1

Receive &amp; Inspect For Transit Damage

Ensure material certification is attached

C209/2/11 10

4.0	QC6	DIMENSIONAL CHECK
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Comment: DIMENSIONAL CHECK

Ensure Material certification comply to Dwg D6104

mf 09/03/20 10

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

Date: Wednesday, 21/01/2009 2:43:02 PM  
User: Julie Dawson

## Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: ROUND BILLET 17-4

Job Number: 45037

Part Number: D6104005

Job Number:



Seq. #:

Machine Or Operation:

Description :

5.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Identify and Stock

Location: \_\_\_\_\_

*ml* 09/03/20

(10)

6.0

QC21

FINAL INSPECTION/W/O RELEASE



Comment: FINAL INSPECTION/W/O RELEASE

*D* 09/03/20 (10)

Job Completion



*W* 09.03.20

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

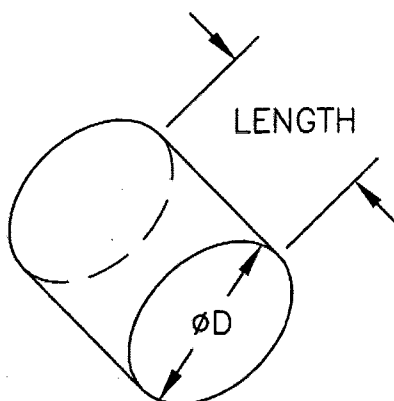


DESIGN RT	DRAWN BY 	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED 	APPROVED 	DRAWING NO. D6104	Rev. B SHEET 1 OF 1
DATE 02.11.25		TITLE ROUND BILLET, 17-4	SCALE NTS
A	01.04.10	NEW ISSUE	
B	02.11.25	CLARIFY ALLOY SPEC ADDED D6104-009/-011 REDUCE LENGTH OF BILLETS	

RELEASED

02.11.29

## SPECIFICATION CONTROL DRAWING



SHOP COPY  
RETURN TO  
ENGINEERING  
UNCONTROLLED COPY  
SUBJECT TO AMENDMENT  
WITHOUT NOTICE  
WORK ORDER  
NO. 45037

MATERIAL: 17-4 PH SS (AMS 5643 OR AISI 630) MIN UTS = 170 KSI (38 HRC)

PURCHASE MATERIAL ACCORDING TO THE FOLLOWING TABLE. SPECIFY ALLOY, DIAMETER x LENGTH (+0.030/-0.000) AS SHOWN.

TOLERANCE ON ALL DIMENSIONS IS +0.030/-0.000.

ALL DIMENSIONS ARE IN INCHES

Part No.	Alloy	D (Diameter)	Length
D6104-001	17-4 PH STAINLESS STEEL	Ø3.00	3.80
D6104-003	17-4 PH STAINLESS STEEL	Ø3.25	3.80
→ D6104-005	17-4 PH STAINLESS STEEL	Ø4.00	5.10
D6104-007	17-4 PH STAINLESS STEEL	Ø4.50	5.10
D6104-009	17-4 PH STAINLESS STEEL	Ø5.25	4.10
D6104-011	17-4 PH STAINLESS STEEL	Ø6.50	4.10

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W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries



A. M. Castle &amp; Co.

## PACKING SLIP

Page 1 of 1

Pack Slip No:27135

<b>Ship From:</b> Castle Metals Montreal 135-Selkirk Avenue Pointe Claire, QUEBEC H9R 1S2		<b>Sold To:</b> DART AEROSPACE LTD 1270 ABERDEEN HAWKESBURY, ON K6A 1K7	<b>Ship To:</b> DART AEROSPACE LTD 1270 ABERDEEN HAWKESBURY, ON K6A 1K7	<b>Deliver To:</b>	
<b>Date Shipped</b> 10-FEB-09	<b>F.O.B.</b> ORIGIN	<b>Freight Terms</b> Prepaid	<b>Carrier</b>	<b>BOL No</b> 25601	<b>Delivery No</b> 2084830

## Shipment Details

<b>Order No</b> 165490	<b>Line No</b> 1	<b>Item No</b> 14996.MO	<b>Description</b> 4.0000.RD.17CR-4NI.STAINLESS.CF.SOL TR.COND A.132.0000-156.0000 CUT TO 5.1 IN ()		<b>Shipped Qty</b> 10 PCS
<b>Purchase Order No</b> 8027		<b>Part Number</b>	<b>Ordered Qty</b> 10 PCS	<b>Shipped Qty</b> 10 PCS	<b>Backorder Qty</b>
<b>Details</b>		<b>Mill</b>	<b>Heat Number</b> A10191	<b>Mech Id</b>	<b>Shipped Qty</b> 10 PCS

These commodities/technologies are subject to US Export Administration & US State Dept. Regulations and, if intended for export, were/are exported thereunder. Diversion contrary to US Law is Prohibited.	
We hereby certify the material covered by this certification conforms in accordance with the above specifications and has been found to meet the applicable requirements for the material, including any specifications forming a part of the description. Test reports are on file subject to examination. All claims for defective material are waived unless made in writing to A.M. Castle & Co. within 60 days of the shipment. Material cut to the correct size, or material cut by the customer cannot be returned for credit.	
This material has been received and inspected by:	Date:



P.O. BOX 977  
SYRACUSE  
NEW YORK 13201

# CERTIFICATE OF TEST

A M CASTLE, INC

3400 N WOLF RD  
FRANKLIN PARK, IL 60131

S A M CASTLE, INC  
H I P 26800 MILES RD  
T O BEDFORD HEIGHTS, OH 44146

04

OUR ORDER NO.  
P5-11275-B-02

DATE  
08/19/08

CUSTOMER ORDER # & DATE  
10-37736

CUSTOMER REQ. #

DISTRICT

B PARSONS

SHIPPED  
FROM

SYRACUSE

## DESCRIPTION OF MATERIAL

CRU 17-4PH RTA IAC 42464 14996  
AHC-3174-31 REV 7 AMS-5643R ASTM-A564-04 TYPE 630 ASME-SA564-07ED T630  
UNS-S17400 AMS-2303E  
DFARS 252.225-7014 ALT 1

SIZE

4 RD

## CHEMICAL ANALYSIS

HEAT NO.

A10191

C	MN	P	S	SI	NI	CR	MO	CU	CE	TA
.046	.50	.030	.021	.61	4.20	15.19	.13	3.23	.29	.009

CASTLE METALS CORP  
DATE RCVD 8/19/08  
IAC 14996  
APPROVED BY *W*

## MECHANICAL PROPERTIES

QUANTITY

HEAT NO.

4586 # A10191

TENSILE PSI

YLD.2%PSI

%ELONG4D

RED/AREA%

HARDNESS  
BHN 343

CAPABILITY PHYSICALS AFTER 900 DEG. F. - 1 HR. AIRCOOL:  
206,960 175,260 12.9 55.3 BHN 415

MACRO TEST OK

MICRO TEST OK

FERRITE 3 %

MATERIAL SOLUTION TREATED AT 1900 DEG. F. HELD 1 HOUR

AT TEMPERATURE -

AIRCOOLED.

MAGNAFLUX F/S = 0/0

CRUCIBLE MATERIALS CORP. VENDOR #18610.

MATERIAL INDOT CAST.

NAFTA - YES

CORRECTED COPY - ORIGINAL CERT DTD 07/23/08

MATERIAL FREE FROM MERCURY CONTAMINATION AT TIME OF SHIPMENT

THANK YOU FOR SELECTING A QUALITY PRODUCT

NO WELD REPAIR PERFORMED

MANUFACTURED BY THE EMPLOYEES OF CRUCIBLE SPECIALTY METALS

MATERIAL MELTED IN U.S.A.

THE ABOVE MATERIAL WAS MANUFACTURED AND TESTED IN ACCORDANCE WITH ABOVE SPECIFICATIONS AND IS IN CONFORMANCE WITH THE SPECIFICATION REQUIREMENTS.

CRUCIBLE MATERIALS CORPORATION  
ACTING BY AND THROUGH ITS SPECIALTY METALS DIVISION

SWORN TO AND SUBSCRIBED BEFORE ME THIS

DAY OF . 20

CERTIFIED  
BY:

NOTARY PUBLIC

JON PIKARSKY

QUALITY ASSURANCE REPRESENTATIVE



